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NASJRB WILLOW GROVE
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VALIDATED DATA PACKAGE, PC15014, NAS WILLOW GROVE PA
11/24/2014
RESOLUTION CONSULTANTS

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Data Validation Report

Project:	NAS JRB Willow Grove, PA	
Laboratory:	Shealy Environmental, Inc.	
Service Request:	PC15014	
Analyses/Method:	EPA SW-846 Method 6010C (ICP-AES) / 6010C	
Validation Level:	Limited	
Resolution Consultants Project Number:	60276503PP.QS	
Prepared by:	Lori Herberich/Resolution Consultants	Completed on: 05/05/2014 Revised 06/18/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants	File Name: PC15014_6010C

SUMMARY

The samples listed below were collected by Resolution Consultants from the NAS JRB Willow Grove, PA site on March 11, 2014 and March 12, 2014.

Sample ID	Matrix/Sample Type
FB(031114)	Field blank
139-PC-01-031114	Paint Chips
139-S-01-031114	Soil
139-S-02-031114	Soil
139-S-03-031114	Soil
139-S-04-031114	Soil
114-S-01-031214*	Soil
114-S-02-031214*	Soil
114-S-03-031214*	Soil
114-S-03D-031214*	Field Duplicate of 114-S-03-031214
114-S-04-031214*	Soil
114-S-05-031214*	Soil
114-S-06-031214*	Soil
114-S-07-031214*	Soil
114-S-08-031214*	Soil

*These samples were originally submitted with "63A" prefix.

Data validation activities were conducted with reference to

- *DoD Quality Systems Manual (QSM) for Environmental Laboratories, version 4.2* (10/2010) (October 2010);

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, specifically SW-846 Method 6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry* (USEPA, 1996);
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010);
- the project-specific Sampling and Analysis Plan; and
- laboratory quality control (QC) limits, as applicable.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✓	Initial calibration/continuing calibration verification
✓	Laboratory blanks/equipment blanks
✓	ICP interference check standards
✗	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓	Field duplicates
✗	ICP serial dilution results
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a quality control (QC) nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were estimated due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria. The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met;
- the continuing calibration verification standard (CCV) method percent difference (%Ds) were met; and
- the low level check standards (CRI or CRA) %R criteria were met.

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the detection limit (DL). Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required.

ICP Interference Check Standards

The ICP interference check standards (ICSA, ICSAB) were reviewed for conformance. All criteria were met for the ICSA and ICSAB.

MS Results

The MS and/or MSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria.

Nonconformances are summarized in Attachment A in Table A-1. Data qualification on the basis of MS and/or MSD nonconformances was as follows:

Qualify Results	%R < 30	80 > %R ≥ 30	%R >120	RPD>20
Detected results	J-	J-	J+	J
Nondetects	R	UJ	Accept	UJ

Notes: MS actions apply to all samples of the same matrix. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

1. If the sample result (SR) > 4x the spike concentration (S), no action is taken.
2. If either the MS or MSD does not meet %R criteria, qualify all associated samples.

Qualified sample results are shown in Table 1.

LCS/LCSD Results

The LCS/LCSD %Rs and/or RPDs were reviewed for conformance with the QC acceptance criteria. The LCS and LCSD %Rs and RPDs were within the QC acceptance criteria.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC acceptance criterion of ≤50% for solid matrices and ≤30% for aqueous matrices. This criterion applies if both results were greater than 5 times the limit of quantitation (LOQ).

All field duplicate precision criteria were met.

ICP Serial Dilution Results

The serial dilution percent differences (%Ds) were reviewed for conformance with the QC acceptance criteria.

The %D was 84.1% for the serial dilution analysis performed on sample 139-S-04-031114. Nonconformances are summarized in Attachment A in Table A-2. All soil samples were qualified as follows:

%D	Qualify Results
>10%	Estimate (J) detected results

Apply actions to all samples in the same preparation batch if sample results are >50X LOQ.

Qualified sample results are shown in Table 1.

Sample Results/Reporting Issues

All analytes detected at concentrations less than the limit of quantitation (LOQ) but greater than the detection limit (DL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

All percent solids were >30%.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
139-S-01-031114	SO	LEAD	33	0.37	0.73	MG/KG	J	m,y
139-S-02-031114	SO	LEAD	14	0.30	0.59	MG/KG	J	m,y
139-S-03-031114	SO	LEAD	42	0.47	0.93	MG/KG	J	m,y
139-S-04-031114	SO	LEAD	23	0.30	0.60	MG/KG	J	m,y
114-S-01-031214	SO	LEAD	880	0.35	0.70	MG/KG	J	m,y
114-S-02-031214	SO	LEAD	730	0.33	0.66	MG/KG	J	m,y
114-S-03-031214	SO	LEAD	540	0.43	0.85	MG/KG	J	m,y
114-S-03D-031214	SO	LEAD	490	0.42	0.83	MG/KG	J	m,y
114-S-04-031214	SO	LEAD	62	0.39	0.77	MG/KG	J	m,y
114-S-05-031214	SO	LEAD	130	0.35	0.70	MG/KG	J	m,y
114-S-06-031214	SO	LEAD	84	0.30	0.60	MG/KG	J	m,y
114-S-07-031214	SO	LEAD	96	0.32	0.64	MG/KG	J	m,y
114-S-08-031214	SO	LEAD	200	0.31	0.62	MG/KG	J	m,y

Attachment A

Nonconformance Summary Tables

Table A-1 - Matrix Spikes

Sample ID	Compound	MS % Recovery	MSD % Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
114-S-01-031214	LEAD	46		80	120		20
139-S-04-031114	LEAD	77	74	80	120	7	20

Table A-2 Serial Dilution

Sample ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOQ	Units	%D
139-S-04-031114	LEAD	0.384		0.707		0.010	MG/L	84.1

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

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Data Validation Report

Project:	NAS JRB Willow Grove, PA
Laboratory:	Shealy Environmental, Inc.
Service Request:	PC15014
Analyses/Method:	EPA SW-846 Method 8082A for PCBs (GC, ECD or ELCD) / 8082A
Validation Level:	Limited
Resolution Consultants Project Number:	60276503PP.QS
Prepared by:	Paula DiMattei/Resolution Consultants Completed on: 05/01/2014
Reviewed by:	Kristin Rutherford/Resolution Consultants File Name: PC15014_PCBs

SUMMARY

The samples listed below were collected by Resolution Consultants from the NAS JRB Willow Grove, PA site on March 11, 2014.

Sample ID	Matrix/Sample Type
15B-C-01-031114	Cement/Concrete
15B-C-02-031114	Cement/Concrete
15B-C-03-031114	Cement/Concrete
610-C-01-031114	Cement/Concrete
FB(031114)	Field blank
15B-C-01D-031114	Field Duplicate of 15B-C-01-031114

Data validation activities were conducted with reference to

- *DoD Quality Systems Manual (QSM) for Environmental Laboratories, version 4.2* (10/2010) (October 2010);
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, Method 8082A, Polychlorinated Biphenyls (PCBs) by Gas Chromatography* (USEPA, 1996);
- the project-specific Sampling and Analysis Plan; and
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008); and
- laboratory quality control (QC) limits, as applicable.

The National Data Validation Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific information, laboratory quality control (QC) limits, DoD QSM 4.2, or project-specific requirements, Resolution Consultants professional judgment was used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✗	Initial calibration/continuing calibration verification
✓	Laboratory blanks/field blanks
✗	Surrogate spike recoveries
✓	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓	Laboratory control sample (LCS) results
✗	Field duplicates
✗	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were qualified as estimated due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria. The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD), correlation coefficient (r)/coefficient of determination (r2), and method acceptance criteria were met;

- the second-source calibration verification (ICV) method acceptance criteria were met;
- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) acceptance criteria were met.

The percent difference (%D) for peak #5 in the beginning CCV for Aroclor 1260 (-20.9%) associated with samples 15B-C-01-031114 and 15B-C-03-031114 exceeded the QC acceptance limit of ≤ 20%. Data qualification on the basis of this nonconformance was as follows:

Criteria	Actions[1,2]	
	Detected	Nondetected
%D or %Drift[3] >20% for each peak	J	UJ

[1] Actions are applied to positive results reported from the nonconforming column. Do not qualify nondetect results unless both columns are noncompliant.
[2] In the absence of a CCV for a particular Aroclor, Resolution Consultants professional judgment was used to apply validation actions to Aroclors with similar retention time ranges. Actions were applied to Aroclors 1016, 1221, 1232, 1242, and 1248 when Aroclor 1016 exceeded CCV criteria and actions were applied to Aroclors 1248, 1254, and 1260 when Aroclor 1260 exceeded CCV criteria.
[3] No guidance for % drift in NFG, thus Resolution Consultants professional judgment was used.

Although not specifically noted in the QSM, each peak is required to meet the CCV criterion as specified by NFG. Therefore, data were qualified as noted above.

It should be noted that the Aroclor results for sample 15B-C-03-031114 were reported from the compliant column; thus, no data validation actions were required for this sample.

Qualified results are shown in Table 1.

Laboratory Blanks/Field Blanks

Laboratory method blanks and equipment rinsate blanks are evaluated as to whether there are contaminants detected above the method detection limit (MDL). Target compounds were not detected in the laboratory method blanks or the field blank [FB(031114)] associated with the samples in this SDG.

Surrogate Spike Recoveries

The surrogate recoveries (%Rs) were reviewed for conformance.

Nonconformances are summarized in Attachment A in Table A-1. Data qualification on the basis of surrogate recoveries was as follows:

Criteria[2]	Action	
	Detected Compounds	Nondetected Compounds
%R>upper limit (UL)	J	No qualification[1]
10% ≤ %R < lower limit (LL)	J	UJ
%R <10% (sample dilution is not a factor)	J	R
%R <10% (sample dilution is a factor)	No qualification[2]	No qualification[2]

[1] NFG recommends no NFG recommends no qualification if %R >UL, but <200%, and professional judgment if %R >200%, thus Resolution Consultants professional judgment was used.
[2] Resolution Consultants professional judgment was used.

Note: If there is no surrogate information due to dilution then estimate (J/UJ) all results. However, in cases where there is surrogate information from multiple runs then base the surrogate actions on the least diluted run.

Qualified sample results are shown in Table 1.

Surrogates were diluted out of several concrete samples as a result of elevated concentrations of target Aroclors present in the sample. No validation actions were taken on this basis.

MS/MSD Results

The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria.

The aqueous MS/MSD analysis was performed on FB(031114). All QC acceptance criteria were met. The solid MS/MSD analysis was performed on concrete sample 15B-C-01-031114. This MS/MSD analysis could not be evaluated since the spiked compounds were diluted out of the MS/MSD samples as a result of the 200x dilution required because of the elevated concentration of Aroclor 1260 present in the native sample. No data validation actions were taken on this basis.

LCS Results

The LCS %Rs were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met.

Field Duplicate Results

Field duplicate RPDs were reviewed for conformance with the Resolution Consultants QC criteria of ≤50% for solid matrices and ≤30% for aqueous matrices. These criteria apply if both results were greater than two times the sample limit of quantitation (LOQ).

Nonconformances are summarized in Attachment A in Table A-2. Data qualification to the analytes associated with the specific field duplicate RPDs was as follows:

Criteria	RPD	Action	
		Detected	Nondetected
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results ≥5xLOQ	>30 (aqueous) >50 (solids)	J	Not Applicable
Sample and duplicate results <5xLOQ	>60 (aqueous) >100 (solids)	J	Not Applicable
If sample or duplicate result is >5xLOQ and the other is not detected	NC	J	UJ
If sample or duplicate result is <5xLOQ and the other is not detected	NC	No qualification	No qualification

Actions: (Resolution Consultants professional judgment was used)

Qualified sample results are shown in Table 1.

Sample Results/Reporting Issues

Consistent with the DoD QSM v4.2, positive results were reported from the primary column unless otherwise indicated.

All compounds detected at concentrations less than the LOQ but greater than the MDL were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation

Dual Column Precision

Sample results were reviewed to ensure that the dual column precision RPD criteria were met. The RPD criterion of <40% was met with the following exceptions:

15B-C-03-031114: Aroclor 1260 (59%)

610-C-01-031114: Aroclor 1260 (46.6%)

Data qualification on the basis of dual column RPDs was as follows:

Actions: (Based on Resolution Consultants professional judgment)

Criteria	Action
RPD > 40	J

Qualified results are shown in Table 1.

Percent Solids

The percent solids data were reviewed to ensure that NFG specified criteria were met. All percent solids criteria were met.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
15B-C-01-031114	SC	AROCLOR-1260	45000	1700	3400	UG/KG	J	c,fd
15B-C-01D-031114	SC	AROCLOR-1260	100000	4200	8600	UG/KG	J	fd
15B-C-03-031114	SC	AROCLOR-1260	6900	1700	3400	UG/KG	J	r
610-C-01-031114	SC	AROCLOR-1260	30	8.3	17	UG/KG	J	r
FB(031114)	WQ	AROCLOR-1016		0.13	0.25	UG/L	UJ	s
FB(031114)	WQ	AROCLOR-1221		0.19	0.25	UG/L	UJ	s
FB(031114)	WQ	AROCLOR-1232		0.22	0.25	UG/L	UJ	s
FB(031114)	WQ	AROCLOR-1242		0.20	0.25	UG/L	UJ	s
FB(031114)	WQ	AROCLOR-1248		0.20	0.25	UG/L	UJ	s
FB(031114)	WQ	AROCLOR-1254		0.13	0.25	UG/L	UJ	s
FB(031114)	WQ	AROCLOR-1260		0.13	0.25	UG/L	UJ	s
FB(031114)	WQ	AROCLOR-1262		0.13	0.25	UG/L	UJ	s
FB(031114)	WQ	AROCLOR-1268		0.13	0.25	UG/L	UJ	s

Attachment A

Non Conformance Summary Tables

Table A-1 - Surrogates

Sample ID	Surrogate	% Recovery column 1/column2	Lower Limit	Upper Limit
FB(031114)	Decachlorobiphenyl	30/32	40	135

Table A-2 - Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	LOD	LOQ	Units	RPD
15B-C-01-031114	15B-C-01D-031114	AROCLOR-1260	45000		100000		1700	3400	UG_KG	75.9

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
JN	The analyte was tentatively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results